

# SEQUENCE LISTING

<110> Donoho, Gregory  
 Scoville, John  
 Turner, C. Alexander Jr.  
 Friedrich, Glenn  
 Zamorowicz, Brian  
 Sands, Arthur T.

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				1460				1465					1470			
Ala	Gly	Phe	Glu	Pro	Cys	Asn	Ile	Arg	Asp	Cys	Pro	Ala	Arg	Trp	Phe	
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Thr	Ser	Val	Trp	Ser	Gln	Cys	Ser	Val	Ser	Cys	Gly	Glu	Gly	Tyr	His	
	1490				1495						1500					
Ser	Arg	Gln	Val	Thr	Cys	Lys	Arg	Thr	Lys	Ala	Asn	Gly	Thr	Val	Gln	
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Val	Val	Ser	Pro	Arg	Ala	Cys	Ala	Pro	Lys	Asp	Arg	Pro	Leu	Gly	Arg	
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Lys	Pro	Cys	Phe	Gly	His	Pro	Cys	Val	Gln	Trp	Glu	Pro	Gly	Asn	Arg	

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Cys Pro Gly Arg Cys Met Gly Arg Ala Val Arg Met Gln Gln Arg His		
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Thr Ala Cys Gln His Asn Ser Ser Asp Ser Asn Cys Asp Asp Arg Lys		
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Arg Pro Thr Leu Arg Arg Asn Cys Thr Ser Gly Ala Cys Asp Val Cys		
1585	1590	1595
Trp His Thr Gly Pro Trp Lys Pro Cys Thr Ala Ala Cys Gly Arg Gly		
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Phe Gln Ser Arg Lys Val Asp Cys Ile His Thr Arg Ser Cys Lys Pro		
1620	1625	1630
Val Ala Lys Arg His Cys Val Gln Lys Lys Lys Pro Ile Ser Trp Arg		
1635	1640	1645
His Cys Leu Gly Pro Ser Cys Asp Arg Asp Cys Thr Asp Thr Thr His		
1650	1655	1660
Tyr Cys Met Phe Val Lys His Leu Asn Leu Cys Ser Leu Asp Arg Tyr		
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Lys Gln Arg Cys Cys Gln Ser Cys Gln Gly		1680
1685	1690	

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<400> 4

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			20					25					30		
Tyr	Phe	Leu	Pro	Glu	Phe	Ala	Leu	Ser	Pro	Gln	Gly	Ser	Phe	Leu	Glu
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Asp	Thr	Thr	Gly	Glu	Gln	Phe	Leu	Thr	Tyr	Arg	Tyr	Asp	Asp	Gln	Thr

50	Ser Arg Asn Thr Arg	55	Ser Asp Glu Asp Lys	60	Asp Gly Asn Trp Asp Ala
65	Trp Gly Asp Trp Ser	70	Asp Cys Ser Arg Thr	75	Cys Gly Gly Gly Ala Ser
	85		90		95
	Tyr Ser Leu Arg Arg		Cys Leu Thr Gly Arg		Asn Cys Glu Gly Gln Asn
	100		105		110
	Ile Arg Tyr Lys Thr		Cys Ser Asn His Asp		Cys Pro Pro Asp Ala Glu
	115		120		125
	Asp Phe Arg Ala Gln		Gln Cys Ser Ala Tyr		Asn Asp Val Gln Tyr Gln
	130		135		140
	Gly His Tyr Tyr Glu		Trp Leu Pro Arg Tyr		Asn Asp Pro Ala Ala Pro
	145		150		155
	Cys Ala Leu Lys Cys		His Ala Gln Gly Gln		Asn Leu Val Val Glu Leu
	165		170		175
	Ala Pro Lys Val Leu		Asp Gly Thr Arg Cys		Asn Thr Asp Ser Leu Asp
	180		185		190
	Met Cys Ile Ser Gly		Ile Cys Gln Ala Val		Gly Cys Asp Arg Gln Leu
	195		200		205
	Gly Ser Asn Ala Lys		Glu Asp Asn Cys Gly		Val Cys Ala Gly Asp Gly
	210		215		220
	Ser Thr Cys Arg Leu		Val Arg Gly Gln Ser		Lys Ser His Val Ser Pro
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	Glu Lys Arg Glu Glu		Asn Val Ile Ala Val		Pro Leu Gly Ser Arg Ser
	245		250		255
	Val Arg Ile Thr Val		Lys Gly Pro Ala His		Leu Phe Ile Glu Ser Lys
	260		265		270
	Thr Leu Gln Gly Ser		Lys Gly Glu His Ser		Phe Asn Ser Pro Gly Val
	275		280		285
	Phe Val Val Glu Asn		Thr Thr Val Glu Phe		Gln Arg Gly Ser Glu Arg
	290		295		300
	Gln Thr Phe Lys Ile		Pro Gly Pro Leu Met		Ala Asp Phe Ile Phe Lys
	305		310		315
	Thr Arg Tyr Thr Ala		Ala Lys Asp Ser Val		Val Gln Phe Phe Phe Tyr
	325		330		335
	Gln Pro Ile Ser His		Gln Trp Arg Gln Thr		Asp Phe Phe Pro Cys Thr
	340		345		350
	Val Thr Cys Gly Gly		Gly Tyr Gln Leu Asn		Ser Ala Glu Cys Val Asp
	355		360		365
	Ile Arg Leu Lys Arg		Val Val Pro Asp His		Tyr Cys His Tyr Tyr Pro
	370		375		380
	Glu Asn Val Lys Pro		Lys Pro Lys Leu Lys		Glu Cys Ser Met Asp Pro
	385		390		395
	Cys Pro Ser Ser Asp		Gly Phe Lys Glu Ile		Met Pro Tyr Asp His Phe
	405		410		415
	Gln Pro Leu Pro Arg		Ala Gly Asn Ile Ile		Leu Gly Leu His Val Pro
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<213> homo sapiens

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gaatgcagca	tggtacctg	cccatcagct	gatggattta	aagagataat	gcccctatgac	1020
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Asn	Cys	Glu	Gly	Gln	Asn	Ile	Arg	Tyr	Lys	Thr	Cys	Ser	Asn	His	Asp
	35					40					45				
Cys	Pro	Pro	Asp	Ala	Glu	Asp	Phe	Arg	Ala	Gln	Gln	Cys	Ser	Ala	Tyr
	50					55					60				
Asn	Asp	Val	Gln	Tyr	Gln	Gly	His	Tyr	Tyr	Glu	Trp	Leu	Pro	Arg	Tyr
65					70					75				80	
Asn	Asp	Pro	Ala	Ala	Pro	Cys	Ala	Leu	Lys	Cys	His	Ala	Gln	Gly	Gln
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Asn	Leu	Val	Val	Glu	Leu	Ala	Pro	Lys	Val	Leu	Asp	Gly	Thr	Arg	Cys
	100							105					110		
Asn	Thr	Asp	Ser	Leu	Asp	Met	Cys	Ile	Ser	Gly	Ile	Cys	Gln	Ala	Val
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Gly	Cys	Asp	Arg	Gln	Leu	Gly	Ser	Asn	Ala	Lys	Glu	Asp	Asn	Cys	Gly
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Val	Cys	Ala	Gly	Asp	Gly	Ser	Thr	Cys	Arg	Leu	Val	Arg	Gly	Gln	Ser
145					150					155				160	
Lys	Ser	His	Val	Ser	Pro	Glu	Lys	Arg	Glu	Gln	Asn	Val	Ile	Ala	Val
			165					170						175	
Pro	Leu	Gly	Ser	Arg	Ser	Val	Arg	Ile	Thr	Val	Lys	Gly	Pro	Ala	His
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Leu	Phe	Ile	Glu	Ser	Lys	Thr	Leu	Gln	Gly	Ser	Lys	Gly	Glu	His	Ser
	195					200						205			
Phe	Asn	Ser	Pro	Gly	Val	Phe	Val	Val	Glu	Asn	Thr	Thr	Val	Glu	Phe
	210					215					220				
Gln	Arg	Gly	Ser	Glu	Arg	Gln	Thr	Phe	Lys	Ile	Pro	Gly	Pro	Leu	Met
225					230					235				240	
Ala	Asp	Phe	Ile	Phe	Lys	Thr	Arg	Tyr	Thr	Ala	Ala	Lys	Asp	Ser	Val
			245					250					255		
Val	Gln	Phe	Phe	Phe	Tyr	Gln	Pro	Ile	Ser	His	Gln	Trp	Arg	Gln	Thr
	260							265					270		
Asp	Phe	Phe	Pro	Cys	Thr	Val	Thr	Cys	Gly	Gly	Gly	Tyr	Gln	Leu	Asn
	275						280					285			
Ser	Ala	Glu	Cys	Val	Asp	Ile	Arg	Leu	Lys	Arg	Val	Val	Pro	Asp	His
	290					295					300				
Tyr	Cys	His	Tyr	Tyr	Pro	Glu	Asn	Val	Lys	Pro	Lys	Pro	Lys	Leu	Lys
305					310					315				320	
Glu	Cys	Ser	Met	Asp	Pro	Cys	Pro	Ser	Ser	Asp	Gly	Phe	Lys	Glu	Ile
			325					330						335	
Met	Pro	Tyr	Asp	His	Phe	Gln	Pro	Leu	Pro	Arg	Ala	Gly	Asn	Ile	Ile
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 Tyr Phe Leu Pro Glu Phe Ala Leu Ser Pro Gln Gly Ser Phe Leu Glu  
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 Asp Thr Thr Gly Glu Gln Phe Leu Thr Tyr Arg Tyr Asp Asp Gln Thr  
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Trp	Gly	Asp	Trp	Ser	Asp	Cys	Ser	Arg	Thr	Cys	Gly	Gly	Gly	Ala	Ser
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Tyr	Ser	Leu	Arg	Arg	Cys	Leu	Thr	Gly	Arg	Asn	Cys	Glu	Gly	Gln	Asn
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Ile	Arg	Tyr	Lys	Thr	Cys	Ser	Asn	His	Asp	Cys	Pro	Pro	Asp	Ala	Glu
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Asp	Phe	Arg	Ala	Gln	Gln	Cys	Ser	Ala	Tyr	Asn	Asp	Val	Gln	Tyr	Gln
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Gly	His	Tyr	Tyr	Glu	Trp	Leu	Pro	Arg	Tyr	Asn	Asp	Pro	Ala	Ala	Pro
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Cys	Ala	Leu	Lys	Cys	His	Ala	Gln	Gly	Gln	Asn	Leu	Val	Val	Glu	Leu
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Ala	Pro	Lys	Val	Leu	Asp	Gly	Thr	Arg	Cys	Asn	Thr	Asp	Ser	Leu	Asp
		180					185						190		
Met	Cys	Ile	Ser	Gly	Ile	Cys	Gln	Ala	Val	Gly	Cys	Asp	Arg	Gln	Leu
	195						200					205			
Gly	Ser	Asn	Ala	Lys	Glu	Asp	Asn	Cys	Gly	Val	Cys	Ala	Gly	Asp	Gly
	210					215					220				
Ser	Thr	Cys	Arg	Leu	Val	Arg	Gly	Gln	Ser	Lys	Ser	His	Val	Ser	Pro
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Glu	Lys	Arg	Glu	Glu	Asn	Val	Ile	Ala	Val	Pro	Leu	Gly	Ser	Arg	Ser
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Val	Arg	Ile	Thr	Val	Lys	Gly	Pro	Ala	His	Leu	Phe	Ile	Glu	Ser	Lys
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Thr	Leu	Gln	Gly	Ser	Lys	Gly	Glu	His	Ser	Phe	Asn	Ser	Pro	Gly	Val
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Phe	Val	Val	Glu	Asn	Thr	Thr	Val	Glu	Phe	Gln	Arg	Gly	Ser	Glu	Arg
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Gln	Thr	Phe	Lys	Ile	Pro	Gly	Pro	Leu	Met	Ala	Asp	Phe	Ile	Phe	Lys
305				310						315					320
Thr	Arg	Tyr	Thr	Ala	Ala	Lys	Asp	Ser	Val	Val	Gln	Phe	Phe	Phe	Tyr
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Gln	Pro	Leu	Pro	Arg	Trp	Glu	His	Asn	Pro	Trp	Thr	Ala	Cys	Ser	Val
		420						425					430		
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	435						440					445			
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Val	Gly	Gly	Cys	Asn	Pro	Gln	Leu	Lys	Leu	His	Ile	Lys	Glu	Glu	Cys
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Val	Ile	Pro	Ile	Pro	Cys	Tyr	Lys	Pro	Lys	Glu	Lys	Ser	Pro	Val	Glu
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Ile	Ala	Thr	Glu	Glu	Pro	Thr	Phe	Ile	Pro	Glu	Pro	Trp	Ser	Ala	Cys

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Val Leu Leu Thr Phe Thr Gln Thr Glu Thr Glu Leu Pro Glu Glu Glu					
	595		600		605
Cys Glu Gly Pro Lys Leu Pro Thr Glu Arg Pro Cys Leu Leu Glu Ala					
	610		615		620
Cys Asp Glu Ser Pro Ala Ser Arg Glu Leu Asp Ile Pro Leu Pro Glu					
	625		630		635
Asp Ser Glu Thr Thr Tyr Asp Trp Glu Tyr Ala Gly Phe Thr Pro Cys					
	645		650		655
Thr Ala Thr Cys Leu Gly Gly His Gln Glu Ala Ile Ala Val Cys Leu					
	660		665		670
His Ile Gln Thr Gln Gln Thr Val Asn Asp Ser Leu Cys Asp Met Val					
	675		680		685
His Arg Pro Pro Ala Met Ser Gln Ala Cys Asn Thr Glu Pro Cys Pro					
	690		695		700
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Lys	Ser	His	Val	Ser	Pro	Glu	Lys	Arg	Glu	Gln	Asn	Val	Ile	Ala	Val
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Pro	Leu	Gly	Ser	Arg	Ser	Val	Arg	Ile	Thr	Val	Lys	Gly	Pro	Ala	His
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Cys Ser Ala Thr Cys Gly Val Gly Ile Gln Thr Arg Asp Val Tyr Cys		
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Leu His Pro Gly Glu Thr Pro Ala Pro Pro Gln Glu Cys Arg Asp Glu		
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Lys Pro His Ala Leu Gln Ala Cys Asn Gln Phe Asp Cys Pro Pro Gly		
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Trp His Ile Gln Glu Trp Gln Gln Cys Ser Arg Thr Cys Gly Gly Gly		
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Thr Gln Asn Arg Arg Val Thr Cys Arg Gln Leu Leu Thr Asp Gly Ser		
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Phe Leu Asn Leu Ser Asp Glu Leu Cys Gln Gly Pro Lys Ala Ser Ser		
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His Lys Ser Cys Ala Arg Thr Asp Cys Pro Pro His Leu Ala Val Gly		
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